

# The Negative Factors Influencing the Career Intention of General Practice Trainees in Eastern China: a Qualitative Study

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## Research Article

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# Abstract

**Background:** There is an acute shortage of general practitioners (GPs) in China, and most of those general practice trainees have low career intention. This study aimed to investigate negative factors influencing the career intention of GPs in eastern China from the perspective of trainees taking standardised residency training, as to identify the barriers for general practice trainees becoming registered GPs, and to provide a policy-making basis for GPs recruitment and retention.

**Methods:** A qualitative design was carried out in two training bases of Jinan and Qingdao in eastern China. Face-to-face, in-depth, semi-structured interviews were conducted, audiotaped, and transcribed using thematic analysis.

**Results:** twenty-one trainees participated in this study. Thematic analysis generated five major themes: (1) low social recognition, (2) low professional identity, (3) low remuneration level, (4) imperfect training system and (5) influence of policy factors.

**Conclusion:** Our results identified various negative factors influencing the career intentions of trainees. In order to eliminate these factors and increase attractiveness of general practice, it is recommended that the government and the public should create a supportive environment, which can be beneficial to the construction and development of general practice.

## Introduction

The role of general practitioners (GPs) has always been important and shall always play a significant role in the management of any patient/case[1]. The number of GPs per 100 000 population across China is around 2.2[2], which is significantly lower than, for example, that of England, which is the 59.5 GPs per 100 000 population[3]. Primary care services form the backbone of health care in most high-income countries [4]. However, their public sector has great difficulties in recruiting and retaining GPs[5–8] and the situation is even worse in China[9]. So far, no effective primary care institution and system has been established in China. Chinese patients tend to choose to see doctors in hospitals because of their higher prestige and perceived levels of training [10]. To integrate the three levels of healthcare provision fully, the rudimentary health system had been strengthened by government in recent years [11]. The construction, development, and training of GPs has become key strategic issues for enhancing the primary care system.

The concept of general practice was introduced into China in the late 1980s [12], but it only started to develop several years ago. In 2010, the Chinese government adopted political commitment to develop and expand general practice under the rubric of *quankeyixue*, translated as “general practice”, to meet the health care needs of China, which is the country with the largest population in the world[13].

In 2011, the Chinese government released a policy statement to establish the training system of GPs [14]. There are eight pathways to become GPs in China currently, which can be divided into three major

training program categories [15]: post-transfer training program, designated general practice undergraduate education program and residency training program ("5 + 3" model) [16]. The post-transfer training program involves retraining the majority of less-educated doctors, which are already working at community health facilities, but are not trained in general practice and hence not certified as GPs. The designated general practice undergraduate education program is to produce qualified GPs for undeveloped areas. The program is 5-year long, and will grant trainee a bachelor degree. The training of general practice is mainly based on a "5 + 3" model, that is, five years of undergraduate education in clinical medicine, followed by three years of standardized training of general practice. This is a full-time three-year program which aimed at producing specialized GPs, which called standardised residency training (SRT) [17]. Due to lack of national standards, the quality of these programs is highly variable. A study depicted that the significant heterogeneity in the quality in GPs training approaches can powerfully influence the success of SRT [18].

Although more and more medical colleges have started developing general practice and the training system of general practice has been established in China, the number of general practice trainees to be registered GPs did not achieve an ideal result. By the end of 2014, the first cohort of SRT resident doctors (totalling 5500) were recruited in 30 Chinese provinces, around 10% of whom (5158) were enrolled as GP residents [19]. One recent study reported 70.2% (198/282) of the trainees were unwilling to register as GPs from a regional survey in China [20]. Another study suggested a relatively or extremely high turnover intention was found in 45.9% (62/135) trainees in China [21].

Many negative factors can affect trainees in their career intention. Heavy workload, low morale, the loneliness of working in practice, low academic ability and negative comments about GPs were the most frequently highlighted factors in western countries[22, 23]. Negative factors influencing trainees' aspiration to select general practice as a career in China can be different from developed countries due to its vastness, diversity, and unique history. Additionally, Chinese studies on this issue were mainly carried out by questionnaires, focusing on issues of job burnout and turnover intention of the trainees in SRT [20, 21] but did not reach the core of trainees daily practice.

Few qualitative studies in China have been conducted to offer insights into negative factors influencing the career intention of trainees in SRT. The aim of this qualitative study was to explore this issue in eastern China, providing a policy-making basis for GPs recruitment and retention.

## Method

A hermeneutic phenomenology[24] methodological orientation was used with semi-structured, in-depth interviews to explore negative factors influencing career intention faced by trainees in SRT. This approach allowed personal opinions to be freely expressed which can better capture the thoughts and feelings from trainees' perspective to attain our research aim.

## Participants and recruitment

A purposive sample of 21 trainees was interviewed in this study. Trainees in SRT were recruited from two training bases in two cities of Eastern China (Jinan and Qingdao), with the help of hospital education managers. All trainees were first identified by hospital education managers who served as a liaison between trainees and researchers. The researchers then contacted those trainees who were interested and who met inclusion criteria in participating interviews and made an appointment to meet at a convenient time and place. The inclusion criteria were: (1) general practice trainees belonging to “5 + 3” training model who were willing to participate in the study, (2) who had been taking standardized training courses for at least one year. We attempted to reach maximal variation in sampling by recruiting trainees from a wide range of backgrounds, including age, gender, years of training and marital status. Trainees’ demographic information is presented in Table 1.

Table 1  
Trainees' demographics characteristics

Trainees' code	Age	Gender	Years of training	Marital status
01	31	F	2	Y
02	36	M	1	Y
03	28	F	2	N
04	27	F	2	N
05	29	M	2	N
06	29	F	2	N
07	29	M	2	N
08	28	M	2	Y
09	29	F	3	Y
10	30	M	1	Y
11	28	M	1	N
12	28	F	1	N
13	26	F	2	N
14	30	F	1	Y
15	24	F	1	N
16	23	F	1	N
17	25	F	2	N
18	24	F	2	N
19	27	F	3	Y
20	28	F	2	Y
21	26	F	3	N

## Data collection

Face-to-face semi-structured interviews were conducted by research assistants trained in qualitative methods between June and August 2019 with 21 trainees in Shandong. Before each interview, the purpose of the interview was explained, and consent to record the interview on audiotape was confirmed by all trainees. In order to create a relaxed atmosphere for communication, interviews were usually carried out in the lounge or intern office. Generally, there were only two people (a trainee and the researcher) in the room, to better encourage trainees to express themselves truthfully.

The first step of our study was to prepare a list of core questions. The core questions of this study were developed based on: (1) The well-known policies related to general practice on the official website of Chinese Medical Doctor Association;(2) a review of the existing literature on what influences trainees' career intention. We conducted two pilot interviews, when trainees were asked to respond to the prepared open questions such as —“Tell me about your career intention in the future”, and to illustrate the reasons for their decision. No substantial changes were needed after piloting with two trainees. A more detailed interview guide is found in Additional file 1. Semi-structured interviews allowed trainees to freely share their own thoughts and perceptions but allowed the researchers retain some control over the direction of the study. Following a strict principle of neutrality during the interview [25], the interviewers (research assistants) tried to remain neutral, maintaining careful non-judgmental listening and keeping a certain distance from the interviewees in order to minimize biases during the interview process.

The interviews lasted 30 to 60 minutes. Field notes were taken during the interviews to capture non-verbal data. The length of the interview varied according to the stage of saturation and the emergence of new themes. The researchers continued interviewing new trainees until no new themes emerged. In the end, a number of 21 interviews were conducted.

## **Data analysis**

Interviews were transcribed verbatim. The transcribed material was required to be thoroughly checked by the interviewers to ensure that the audios have been correctly transcribed. To ensure the credibility of the data, the researcher returned the transcripts to verify that the data and the interpretation of the findings reflected trainees' perspective. Data were analyzed using a thematic content analysis [26]. To ensure consistency, researchers strictly followed the steps of analysis process. First, data for each of the trainees were read several times and their perceptions, experience, and intention about being GPs were identified and carefully listed. Then, segments of text were categorized according to the salient theme of the segment by two experienced researchers, a process called “coding”. Any inconsistencies in coding assignment were resolved in discussions. The second step of data analysis mainly focuses on the deduction and induction of coding by comparison and integrated into a theme. Capturing salient patterns of data and explanations for the stated perceptions and experience provided by the trainees are emphasized in this process. In the third step, researchers checked to make sure no information was missing and reached a consensus on the final categories.

## **Results**

### **Sociodemographic characteristics of participants**

There were no refusals of consent or dropouts during interviews, with a total of 21 trainees participating. Of these, fifteen were female; seven had experience of a GP placement for one year, eleven for two years and three for three years; eight were married and the rest among them were single.

### **Key themes**

The study presented five overarching themes that described negative factors influencing the career intention of the trainees in SRT: low social recognition, low professional identity, low remuneration level, imperfect teaching system and influence of policy factors. Table 2 shows the results of the interview analysis.

Table 2  
Results of qualitative analysis with themes, subthemes and number of codes

Themes	Subthemes	No. of codes
low social recognition	Little knowledge	13
	Negative impression of GPs	9
	Patient distrust	8
low professional identity	Unrecognized value	5
	Limited career development	12
	Concern of the prospect	16
low remuneration level	Guaranteed minimum remuneration	16
Imperfect training system	unprofessional supervisor	6
	Unreasonable training programs	12
Influence of policy factors	Incomplete supporting policies	10
	Poor implementation of policies	5

## Low social recognition

A feeling of low social recognition was expressed by many of the trainees. They stated that general practice received little recognition and acknowledgement from public. There was little recognition even from senior colleagues and peers in hospital.

*I am a doctor of this hospital where I'm also a trainee. When I go to other departments for rotation, I find almost none of them know what general practice is. They would ask what general practice do, and lots of my friends also ask me this question. (02, M, 36years)*

*People think it doesn't really matter if there're no general practice, or, the recognition of GPs is really low, even not well among doctors. (01, F, 31years)*

There was also a negative impression about GPs among the public, as some of the trainees illustrated how family or friends portrayed GPs.

*My family and friends know very little (about GPs). They'd say "those are the doctors in town health centers, isn't it right? You really would work there?" Some of my schoolmates working in county hospitals would say "that's where you would go? You might as well come home and work at this county hospital." (18, F,24 years)*

Eight trainees indicated patients had doubts about the ability of the GPs and tended to favor specialist in secondary or tertiary hospitals.

*Patients' acceptance is still not well. When we take the training, if we tell patients we're GPs, they'd question our ability. (05, M,29 years)*

*Patients usually don't trust the results in community health centers, and would go to a big hospital again for reassurance. (10, M,30 years)*

*(Some) patients don't know the difference between primary and tertiary hospitals. They think they must go to a tertiary hospital for the best doctors when they're sick. (19, F,27years)*

## **Low professional identity**

Although general practice trainees should be regarded as those who tend to take a more holistic approach than their specialist counterparts, in our interviews, five trainees judged themselves as less competent than other specialties. They tended to have negative opinions regarding the professionalism and competence of general practice. They expressed that there was less value out of the work of general practice.

*I do think general practice are not as proficient as specialists. Specialists do focus more on their own research areas. (01, F,31years)*

*I don't think general practice can meet the primary needs. Even chronic diseases require deep understanding of each symptom, which I don't have. I can't give them specific instructions. They still need specialists. (12, F,28years)*

Twelve trainees felt it would be a waste of their medical degree since there was lack of clinical work content and there is little room for career development at the grassroots level for general practice, compared to hospital medicine.

*If I work at grassroots level, I would probably be doing some clerical work such as making health records. I wouldn't like it if my job is not clinic related. All these years of study and 3 years of training would go to waste if I were not a doctor. (14, F,30years)*

The prospect of general practice also caused concern for most of the trainees, which seemed to drive trainees away from primary care.

*From higher levels to grassroots level, many big hospitals might have already understood the importance of general practice and established general practice departments, but there's still a long way to go for hospital of lower levels. It's impossible for patients to acknowledge this general practice department within a couple of years. (01, F, 31years)*

*Currently the general practice' career path is not so clear, or the career prospect is not so promising. If it stays this way, not providing a prospect of development, I wouldn't work at community levels. (17, F, 25years)*

## **Low remuneration level**

Trainees expected to earn a guaranteed minimum remuneration, since salary was considered to be a fair return on trainees' years spent in medical education and a way to make their lives secure. However, most of the trainees from our interviews expressed that they were unsatisfied about the current remuneration of GPs. Low remuneration level appeared to be a primary driver to intention to not choose GPs.

*Doctors are people too, and have family to support. Medical students work very hard to go through all these years, 5 years of undergraduate study and 3 years of training. It's not easy. (11, M, 28years)*

*The least is to support life. That's the first point. You have to meet all the living needs before you can focus on your job. This is the most basic. (13, F, 26years)*

*(I've) never thought about working at grassroots level. Of course, if you can only make a few hundred or one or two thousand yuan a month working there, I can barely make ends meet. Why would I go there? (08, M, 28years)*

## **Imperfect training systems**

Some supervisors appeared to design their teaching syllabus based on their own preference and sometimes used fixed syllabus, rather than responding to the needs of the trainees.

*My supervisor doesn't care which discipline we're from. When she takes us on ward rounds, she teaches us something based on what diseases we see, not on each trainee's discipline. (09, F, 29years)*

In addition, the curriculum of general practice training did not highlight the characteristics of general practice. Twelve trainees thought there was a lack of outpatient experience in their training.

*I think the curriculum needs to be improved. When we take the training, we spend most time doing ward rounds. But at grassroots levels, most work we do would be at the outpatient clinic. And admitted patients at a tertiary hospital could have rather severe symptoms, which are rare at grassroots levels. (10, M, 30years)*

## **Influence of policy factors**

Some of trainees argued that a series of improved medical policies must be in place. Trainees stated that the first-visit care system and the two-way referral system between GPs and specialists should be helpful for guiding patients and for reducing the waste of resources; yet, such systems were too weak in China.

*(The process should be that) an almost recovered patient of a higher level hospital should go to a lower level hospital for further recovery, and a patient from a lower level hospital should go to a higher level hospital for treatment if requested. But now many policies are defective. (10, M, 30years)*

A few of trainees expressed frustration at the implementation of policy, because there were gaps between what were called for and what were actually done.

*Some policies are not well implemented. They're only talked about but not truly carried out. For example, in this hospital where I'm taking the training, the building of general practice department has been talked about for years, and now only one department is built. For lower level hospitals, people don't think this is important, as if it would make no difference with or without it. (01, F, 31years)*

*I think more efforts should be made on implementation. Otherwise they're all empty promises. (03, F, 28years)*

## **Discussion**

This study explored negative factors influencing the career intention of general practice trainees in China. Despite significance improvements has been made in general medicine education, these negative factors influencing trainees' career intention show there is still plenty of room to improve GPs recruitment.

According to our study, general practice received little recognition and acknowledgement from public. On the one hand, general practice is a relatively new clinical discipline in China, which has not formed a professional status and discipline field [27, 28]. It was not until 2009 that "general medicine" got acknowledge as a new basic discipline, which was listed as a second-level discipline under "clinical medicine"[29]. The public and even trainees' peers has not embraced the concept of general practice and are not accustomed to community health care services. This is different from western countries, where general practice has become a common aspect of their medical system[30]. On the another hand, the image of GPs in China, is much likely to be connected with "barefoot" doctor or village doctors, who work in rural regions and have limited technical skills or medical capability[31, 32]. Patients consider that those receiving 3–5year medical education cannot meet their needs. At the same time, the quality of care in tertiary hospitals is better than that in primary health care institutions, which lead to patients to skip the community health centers and go straight to the outpatient departments of tertiary hospitals[33]. The inadequate use of primary health care is also contributed to GPs' low social acceptance.

The Chinese health care system emphasized the importance of urban hospitals with specialized departments as well as struggle against specific diseases. Therefore, large-scale general hospitals in urban areas are regarded as token for quality care in China. The role of GPs in community health centers

or rural are often responsible for “minor ailments” or chronic diseases in curative realm, thus GPs seem to be appreciated as an ‘easy’ medical specialty in China. The professional values of GPs were not valued by trainees in our study. Previous studies, however, have shown that professional identity level among GPs in China was high[34, 35]. One possible interpretation could be that compared with GPs, trainees in our study had less work experience and had less opportunity to understand the mission of GPs. A number of studies highlighted the important influence of the workplace experience and the length of train time on recruitment[36, 37]. Our interpretation was supported by these studies.

The low remuneration level seems to be a key factor explaining why trainees do not want to take up the profession of GPs. The remuneration structure of GPs in China can be divided into two parts: the basic performance and incentive performance. In order to reduce the phenomena of over-prescription, the Chinese government introduced a zero-mark-up drug policy in 2009[38]. However, the removal of drug mark-up has in turn affected the remuneration of GPs at the grassroots, as the GPs bonuses depend on drug revenues[39]. Also, lack of a fair remuneration system is another problem. The primary health care (PHC) in China includes various important services such as public health education and counselling, disease preventive, rehabilitation [40], whereas PHC have not been received appropriate remuneration by the government, which exacerbated the low remuneration level of GPs. Studies showed that Chinese GPs who worked in PHC institutions usually received lower income than specialists in secondary/tertiary hospitals whose remuneration flattening with social average wage (1 times or so) [41, 42]. While it is often reported that financial factors especially remuneration might influence medical students’ decisions regarding their future careers [43].

Unsatisfying training system was an important negative factor that emerged in this study, but is not a common factor in western countries. In the current Chinese context, most general practice teaching physicians are hospital-based specialists, and they have little contact with GPs themselves [44]. GPs trainees thus do not well understand the complementary aspects between general practice and specialist, if their supervisors do not give an appropriate and adequate instruction. Also, there is a traditional situation of “apprenticeship” in China, when supervisors dominate the agenda, with student-oriented learning is seen as less important [45]. Additionally, emphasizing on specialty development in China may not create an environment in which trainees feels that their supervisors who are pursuing specialist-training programs is willing to listen to them and help them. Our results suggested that the current training structure’s inflexibility can discourage trainees from taking time out to gain different and broader experiences. This can reduce the quality of training, since developing a mutual trust relationship between supervisors and trainees can often improve learning outcomes [46].

Shortage of GPs, poor service skills, and low social recognition and profession identity are the main limiting conditions influencing the development of GPs responsibility system and two-way system [47]. These flawed systems, in turn, impede the trainee's decision to become a GP. In addition, there are few drugs available in primary medical institutions for GPs to prescribe, because of imperfect basic drug system, which cannot meet the needs of patients and attract patients to seek medical treatment in the primary medical institutions [48]. Developing a system to make GPs the first option is necessary for

promoting general practice [49]. The other challenge is the lack of recognition of importance of the reform in policy. The long-term benefits of the GP' reform are not well understood by bureaucrats of local government and staffs in the district hospitals, who find it difficult to implement policies [50]. Strengthening leadership and organizational structure are required for GPs career development in the future.

## **Strengths and limitations of this study**

This study took place at a time when all interviewees were taking standardized training courses, so the trainees were well timed to be assessed of their views on what had affected their career choices. Trainees from different demographic characteristics contributed in this study, including genders, a varied range of training years and experience, and helped to provide a diverse and complete profile of GP trainees. The limitations of our study are as follow. First, generalizability of our findings may be limited, since we only recruited those trainees in residency training program. The trainees in the post-transfer training program and the designated general practice undergraduate education program were not selected into our study. Besides, this study was based in one province where choosing two wealthy regions and there is an uneven development of GP training in various regions [51]. The speed and quality of general practice training in wealthy areas are faster than in poor ones. The socio-economic status in Jinan and Qingdao are in top-range in Shandong province. Interviews with trainees in others areas of China may identify additional themes.

## **Conclusion**

We have identified negative aspects which can influence the career intention of trainees, including social recognition, professional identification, remuneration, training system and policy. These results suggest that more work needs to be done to increase the attraction of general practice. It is hoped that through educational campaigns, the importance of community health services and the status of GPs can receive more recognition from the public. Additionally, the government should constantly strengthen policy support, such as fair remuneration system, evaluation system of training curriculum and management system of GP trainers. It is also necessary to strengthen leadership and organizational structures to ensure policy implementation to attract highly qualified GPs to provide primary care in China.

## **Declarations**

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### **Availability of data and materials**

The data used and/or analyses during the study are available from the corresponding author upon reasonable request.

### **Authors' contributions**

LT analyzed the data, and wrote the manuscript. HY participated in the design of the study, performed the data analyses, and helped to draft the manuscript. ZXM supported interpretation of findings and edited the manuscript. QL collected the data and participated in the coordination of the study. SPL conceived and designed the study, analyzed the data, and was involved in revising the manuscript for important content. All authors have read and approved the final manuscript.

### **Ethics approval**

This study was approved by the Medical Ethics Committee of Medical School, Shandong University (ECSHCMSDU20190501), and conforms to the ethics guidelines of the Declaration of Helsinki. Informed consent was obtained from all participants and to allow the researchers to make follow-up contact to confirm the components and interpretation of data analysis.

### **Competing Interests**

The authors declare no conflict of interest.

### **Consent for publication**

Not applicable.

## **References**

1. Agarwal SK, Agarwal P. Role of General Practitioners in Era Of Superspeciality. *Apollo medicine*. 2006; 3(3):301–304.
2. Chinese Medical Association. The 4th General Practitioners Training Summit forum of Chinese Medical Association and the 16th Community Health and General Practitioners Academic Annual Meeting [in Chinese]. Available from: <http://www.mdweekly.com.cn/html/xinwen/xinxizhichuang/2019/0718/22550.html>. (accessed 18 Apr 2019).
3. NHS. The Information Centre for health and social care. NHS workforce: summary of staff in the NHS: results from September 2012 census. 2013. Available from: <http://content.digital.nhs.uk/catalogue/PUB10392/nhs-staf-2002-2012-over-rep.pdf>. (accessed 24 Feb 2017).
4. Thompson M, Walter F. Increases in general practice workload in England. *Lancet*. 2016;387(10035): 2270–2272.

5. Brett TD, Arnold-Reed DE, Phan CT. Work intentions and opinions of general practice registrars. *Med J Aust.*2009;191(2):73–74.
6. Heponiemi T, Manderbacka K, Vänskä J, Elovainio M. Can organizational justice help the retention of general practitioners? *Health Policy.*2013;110(1):22–28.
7. Wilkinson E. UK general practice in crisis: time for a rethink? *Lancet.* 2014; 384(9940):295–296.
8. Newton DA, Grayson MS. Trends in career choice by US medical school graduates. *JAMA.* 2003;290(9):1179–1182.
9. Wang J, Zhao Q, Liu T, An M, Pan Z. Career orientation and its impact factors of general practitioners in Shanghai, China: a cross-sectional study. *BMJ Open.*2019; 9(3): e021980.
10. Yang J, Guo A, Wang Y, Zhao Y, Yang X, Li H, Duckitt R, Liang W. Human resource staffing and service functions of community health services organizations in China. *Ann Fam Med.*2008;6(5):421–427.
11. Wang Y, Castelli A, Cao Q, Liu D. Assessing the design of China’s complex health system – Concerns on equity and efficiency. *Health Policy OPEN.*2020; 1:100021.
12. Research group on the research of the status quo of the National General Practice Professional Team. A national investigation on status of general practitioners in China. *Chinese Journal of General Practitioners.*2009;8:86–90.
13. Chen Q, Lian SQ, Plegue MA, Feters MD. First-year medical student attitudes about general practice in China: a comparison between Chinese and international students. *Adv Med Educ Pract.*2019,10:571–579.
14. State Council. State Council’s Guiding Opinion on Establishing the General Practitioner System [in Chinese]. Available from: [http://www.gov.cn/zwggk/2011-07/07/content\\_1901099.htm](http://www.gov.cn/zwggk/2011-07/07/content_1901099.htm). (accessed 7 Jul 2011).
15. Lian S, Chen Q, Yao M, Chi C, Feters MD. Training Pathways to Working as a General Practitioner in China. *Fam Med.*2019;51(3):262–270.
16. Wu D, Lam TP. At a Crossroads: Family Medicine Education in China. *Acad Med.* 2017;92(2):185–191.
17. Wu D, Lam TP. Underuse of Primary Care in China: The Scale, Causes, and Solutions. *J Am Board Fam Med.*2016. 29(2):240–247.
18. Huang Y, Guo A. Development of undergraduate family medicine teaching in China. *Br J Gen Pract.*2011;61(585):304–305.
19. National Health and Family Planning Commission. Development report on China’s standardised residency training system (2014) [in Chinese]. Available from: <http://www.moh.gov.cn/qjjys/s3594/201505/953d3206bb1c4c869944e0a139328a0d.shtml>. (accessed 15 Nov 2015).
20. Li WM, Shu QQ, Huang QY. The intention and influencing factors of registration of practitioners in the training before transferring the post of general practitioners in Yunnan Province. *Chinese Journal of General Practice.*2018;16(6): 863–865.

21. Huang L, Hu SY, Wang H. Study on the relation of job burnout and turnover intention in the resident physician of general standardized training program. *Shanghai Medical & Pharmaceutical Journal*. 2017;38(24): 7–11.
22. Mariolis A, Mihas C, Alevizos A, Gizlis V, Mariolis T, Marayiannis K, Tountas Y, Stefanadis C, Philalithis A, Creatsas G. General Practice as a career choice among undergraduate medical students in Greece. *BMC Med Educ*. 2007, 7: 15.
23. Barber S, Brettell R, Perera-Salazar R, Greenhalgh T, Harrington R. UK medical students' attitudes towards their future careers and general practice: a cross-sectional survey and qualitative analysis of an Oxford cohort. *BMC Med Educ*, 2018, 18(1): 160.
24. Wojnar DM, Swanson KM. Phenomenology: an exploration. *J Holist Nurs*. 2007;25(3):172–80; discussion 181-2; quiz 183-5.
25. Bowling A. *Research Methods in Health*. 1997, Open University Press, Buckingham.
26. Lieblich A, Tuval-Mashiach R, Zilber T. *Narrative research: reading analysis and interpretation*. 1998, Thousand Oaks, California.
27. Kong X, Yang Y. The current status and challenges of community general practitioner system building in China. *QJM*. 2015; 108(2):89–91.
28. Hui Y. Let general practice be at the forefront of modern medicine. *Journal of Peking university Health Sciences*. 2011;43(3):323–326.
29. Peking University Undergraduate Education. Classification and code of disciplines [in Chinese]. Available from: <http://dean.pku.edu.cn/urtpku/yjxk.html>. (accessed 11 Mar 2017).
30. Swing, SR. The ACGME outcome project: retrospective and prospective. *Med Teach*. 2007;29(7): 648–654.
31. Zhang S, Zhang W, Zhou H. How China's new health reform influences village doctors' income structure: evidence from a qualitative study in six counties in China. *Hum Resour Health*. 2015;13: 26.
32. Sidel VW. The Barefoot Doctors of the People's Republic of China. *New England Journal of Medicine*. 1972; 286(24):1292–1300.
33. Hu Y, Zhang Z. Skilled doctors in tertiary hospitals are already overworked in China. *Lancet Glob Health*. 2015;3(12):e737.
34. Li LQ, Gan Y, Yang YD. Analysis on professional identity and related factors among Chinese general practitioners: a National Cross-sectional Study. *BMC Fam Pract*. 2020; 21(1):80.
35. Wan YY, Jiang X, Lu L, et al, Professional Identity of General Practitioners in Shenzhen: Influencing Factors and Promotion Methods. *China Continuing Medical Education*. 2020;12(8):46–49.
36. Amin M, Chande S, Park S, Rosenthal J, Jones M. Do primary care placements influence career choice: What is the evidence? *Educ Prim Care*. 2018;29(2): 64–67.
37. Marchand C, Peckham S. Addressing the crisis of GP recruitment and retention: a systematic review. *Br J Gen Pract*. 2017; 67(657): e227-e237.

38. General Office of the State Council. Notice on opinions on county-level public hospital comprehensive reform pilot [in Chinese]. Available from: [http://www.gov.cn/zwggk/201206/14/content\\_2161153.htm](http://www.gov.cn/zwggk/201206/14/content_2161153.htm). (accessed 10 Sept 2019).
39. Li X, Harlan MK, Winnie Y. Quality of primary health care in China: challenges and recommendations. *Lancet*. 2020; 395(10239):1802–1812.
40. Wu HY, Zhang WD, Wu Q, Li P. Management of suburban community health services within a family doctor-based community healthcare system [in Chinese]. *Chin Gen Pract*. 2014; 17(1):22–24.
41. Dang WW, Wang Z. An International Comparative Study of the Income Gap Between Doctors in OECD Countries and China [in Chinese]. *Chinese Health Economics*. 2020. 39(3):24–30.
42. Ren W, Yao L, Feng YM. The present situation and enlightenment of general practice system at home and abroad [in Chinese]. *Chin J Public Health*, 2012. 4:509–510.
43. Morra DJ, Regehr G, Ginsburg S. Medical students, money, and career selection: students' perception of financial factors and remuneration in family medicine. *Fam Med*. 2009;41(2):105–110.
44. Fetters MD, Chi C, Hu L. Insights on Developing General Practice Education in China. *Acad Med*. 2017; 92(10):1365.
45. Mattsson B, Freeman GK, Coles CR, Schmedlin J. General practice in the undergraduate curriculum: 20 interviews with Southampton final-year students. *Med Educ*. 1991, 25(2):144–150.
46. Bonnie LHA, Visser MRM, Kramer AWM, van Dijk N. Insight in the development of the mutual trust relationship between trainers and trainees in a workplace-based postgraduate medical training programme: a focus group study among trainers and trainees of the Dutch general practice training programme. *BMJ Open*. 2020; 10(4): e036593.
47. Wu, Y, Zhao YP, Huang XX, Wang JY, Xu HL, Su HL. Exploration and practice of general practitioner responsibility system in an urban community of Shanghai. *Family Medicine and Community Health*. 2015. 3(4):15–22.
48. Chen JB, Jia YX. Analysis and Thinking upon the Implementation of Two-way Referral and Hierarchical Medical System. *Chinese Journal of Social Medicine*. 2017;34(2):111–113.
49. Ren W, Liu y, Qiu Y, Ren JJ. Development of general practice education and training in China. *Chin Med J (Engl)*. 2014;127(17):3181–3184.
50. Liang WN, Daniel K, Yin C. Community Health Care Reform and General Practice Training in China - Lessons Learned. *Med Educ Online*. 2004; 9(1): 4366.
51. Shu ZQ, Wang ZX, Chen R. Allocation and development of the general practitioner workforce in China from 2012 to 2015: a literature review. *The Lancet*. 2017; 390(Supplement 4):S91.

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